

IX. *Description of a Meteor, observed Aug. 18, 1783.**By Mr. Tiberius Cavallo, F. R. S.*

Read Jan. 15, 1784.

**B**EING upon the Castle Terrace at Windsor, in company with my friend Dr. JAMES LIND, Dr. LOCKMAN, Mr. T. SANDBY, and a few other persons, we observed a very extraordinary meteor in the sky, such as none of us remembered to have seen before. We stood upon the north-east corner of the terrace, where we had a perfect view of the whole phenomenon; and as every one of the company remarked some particular circumstance, the collection of all which furnished the materials for this account, it may be presumed, that this description is as true as the nature of the subject can admit of.

The weather was calm, agreeably warm, and the sky was serene, excepting very near the horizon, where an haziness just prevented the appearance of the stars. A narrow, ragged, and oblong cloud stood on the north-west side of the heavens, reaching from the extremity of the haziness, which rose as high as 18 or 20 degrees, and stretching itself for several degrees towards the east, in a direction nearly parallel to the horizon. It was a little below this cloud, and consequently in the hazy part of the atmosphere, about the N. by W.  $\frac{1}{2}$  W. point of the compass,

compass, that this luminous meteor was first perceived. Some flashes of lambent light, much like the *aurora borealis*, were first observed on the northern part of the heavens, which were soon perceived to proceed from a roundish luminous body, nearly as big as the semidiameter of the moon, and almost stationary in the abovementioned point of the heavens (see A in the annexed figure, tab. IV). It was then about 25 minutes after nine o'clock in the evening \*. This ball, at the beginning, appeared of a faint bluish light, perhaps from its being just kindled, or from its appearing through the haziness; but it gradually increased its light, and soon began to move, at first ascending above the horizon in an oblique direction towards the east. Its course in this direction was very short, perhaps of five or six degrees; after which it turned itself towards the east, and moving in a direction nearly parallel to the horizon, reached as far as the S. E. by E. where it finally disappeared. The whole duration of the meteor was half a minute, or rather less; and the altitude of its track seemed to be about 25 degrees above the horizon. A short time after the beginning of its motion, the luminous body passed behind the above-mentioned small cloud, so that during this passage we observed only the light that was cast in the heavens from behind the cloud, without actually seeing the body from which it proceeded, for about the sixth or at most the fifth part of its track; but as soon as the meteor emerged from behind the cloud, its light was prodigious. Every object appeared very distinct; the whole face of the country in that beautiful prospect before the terrace

\* Mr. SANDBY's watch was seventeen minutes past nine nearest; it does not mark seconds.

being instantly illuminated. At this moment the body of the meteor appeared of an oblong form, like that represented at **B** in the figure; but it presently acquired a tail, and soon after it parted into several small bodies, each having a tail, and all moving in the same direction, at a small distance from each other, and very little behind the principal body, the size of which was gradually reduced after the division (see **D** in the figure). In this form the whole meteor moved as far as the S. E. by E. where the light decreasing rather abruptly, the whole disappeared.

During the phenomenon no noise was heard by any of our company, excepting one person, who imagined to have heard a crackling noise, something like that which is produced by small wood when burning. But about ten minutes after the disappearance of the meteor, and when we were just going to retire from the terrace, we heard a rumbling noise, as if it were of thunder at a great distance, which, to all probability, was the report of the meteor's explosion; and it may be naturally imagined that this explosion happened when the meteor parted into small bodies, *viz.* at about the middle of its track.

Now if that noise was really the report of the explosion which happened in the abovementioned place, the distance, altitude, course, and other particulars relating to this meteor, must be very nearly as expressed in the following list; they being calculated with mathematical accuracy, upon the preceding particulars; and upon the supposition that sound travels 1150 feet per second. But if the noise we heard was not that of the meteor's explosion, then the following calculations must be considered as quite useless and erroneous.

*Meteor observed Aug. 18, 1783.*

III

Distance of the meteor from Windsor Castle	130 miles.
Length of the path it described in the heavens	550 miles.
Diameter of the luminous body when it came out of the clouds	1070 yards.
Its height above the surface of the Earth	56½ miles.
The explosion must have happened perpendicularly over Lincolnshire.	

T. CAVALLO.

